

FORM-PTO-1390 (Rev. 12-29-99)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER	
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371				004565-070	
				U.S. APPLICATION NO. (If known, see 37 C.F.R. 1.5) <div style="font-size: 1.5em; font-weight: bold; text-align: center;">09/914767</div>	
INTERNATIONAL APPLICATION NO. PCT/GB00/00704		INTERNATIONAL FILING DATE 28 February 2000		PRIORITY DATE CLAIMED 5 March 1999	
TITLE OF INVENTION APPARATUS FOR ASSESSMENT OF MATTRESSES					
APPLICANT(S) FOR DO/EO/US Duncan Shirreffs BAIN; Martin FERGUSON-PELL and Patrick John DAVIES					
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:					
<ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. 2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. 3. <input checked="" type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and the PCT Articles 22 and 39(1). 4. <input checked="" type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date. 5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2)) <ol style="list-style-type: none"> a. <input checked="" type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau). b. <input checked="" type="checkbox"/> has been transmitted by the International Bureau. c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US) 6. <input type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)). 7. <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)) <ol style="list-style-type: none"> a. <input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau). b. <input type="checkbox"/> have been transmitted by the International Bureau. c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. d. <input type="checkbox"/> have not been made and will not be made. 8. <input type="checkbox"/> A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)). 9. <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). (unexecuted) 10. <input type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)). 					
Items 11. to 16. below concern other document(s) or information included:					
<ol style="list-style-type: none"> 11. <input type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. 12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. 13. <input checked="" type="checkbox"/> A FIRST preliminary amendment. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment. 14. <input type="checkbox"/> A substitute specification. 15. <input type="checkbox"/> A change of power of attorney and/or address letter. 16. <input checked="" type="checkbox"/> Other items or information: Published appln. No. WO 00/51470, 4 sheets of formal drawings; PCT forms: IPEA/416, RO/101 and Response dated March 28, 2001 					

U.S. APPLICATION NO. (If known, fee 37 CFR 1.55) 09/914767		INTERNATIONAL APPLICATION NO. PCT/GB00/00704		ATTORNEY'S DOCKET NUMBER 004565-070	
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17. <input checked="" type="checkbox"/> The following fees are submitted:	CALCULATIONS	PTO USE ONLY			
Basic National Fee (37 CFR 1.492(a)(1)-(5)): Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$1,000.00 (960) International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$860.00 (970) International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$710.00 (958) International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$690.00 (956) International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) \$100.00 (962)					
ENTER APPROPRIATE BASIC FEE AMOUNT =		\$ 860.00			
Surcharge of \$130.00 (154) for furnishing the oath or declaration later than 20 <input type="checkbox"/> 30 <input type="checkbox"/> months from the earliest claimed priority date (37 CFR 1.492(e)).		\$			
Claims	Number Filed	Number Extra	Rate		
Total Claims	10 -20 =	0	X\$18.00 (966)	\$ 0	
Independent Claims	2 -3 =	0	X\$80.00 (964)	\$ 0	
Multiple dependent claim(s) (if applicable)			+ \$270.00 (968)	\$	
TOTAL OF ABOVE CALCULATIONS =				\$ 860.00	
Reduction for 1/2 for filing by small entity, if applicable (see below).				\$ 430.00	-
SUBTOTAL =				\$ 430.00	
Processing fee of \$130.00 (156) for furnishing the English translation later than 20 <input type="checkbox"/> 30 <input type="checkbox"/> months from the earliest claimed priority date (37 CFR 1.492(f)).				\$	
TOTAL NATIONAL FEE =				\$ 430.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 (581) per property +				\$	
TOTAL FEES ENCLOSED =				\$ 430.00	
				Amount to be: refunded	\$
				charged	\$

a. ☐ Small entity status is hereby claimed.

b. ☒ A check in the amount of \$ 430.00 to cover the above fees is enclosed.

c. ☐ Please charge my Deposit Account No. 02-4800 in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.

d. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 02-4800. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

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SIGNATURE

for: William C. Rowland
NAME

30,888
REGISTRATION NUMBER

Patent
Attorney's Docket No. 004565-070

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of)
)
Duncan Shirreffs BAIN et al.) Group Art Unit: Unassigned
)
Application No.: Unassigned) Examiner: Unassigned
)
Filed: September 5, 2001)
)
For: APPARATUS FOR ASSESSMENT)
OF MATTRESSES)

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination of the above-captioned application, kindly enter the following amendment.

IN THE CLAIMS:

Kindly rewrite claims 1 and 3-10, as follows:

1. (Amended) Apparatus for assessing the condition of a person support surface which comprises a frame for extending over the support surface, an indenter mounted on said frame and a load sensor disposed between the indenter and the frame, means for pressing the indenter into the support surface, displacement measuring means for measuring the movement of the indenter into the support surface and data processing means for analyzing the force applied to the indenter in relation to the displacement of the

9. (Amended) Apparatus according to claim 1 wherein said data processing means includes means for assigning an identifying code to support surface to be tested and for preparing a label bearing said code and data relating to the behavior of the mattress when tested.

10. (Amended) A method of testing a mattress in situ on a bed base which comprises applying to the surface of the mattress an indenter, depressing the indenter into the mattress, measuring the displacement of the indenter as a function of the load applied to the indenter, constructing a load/displacement curve and discriminating the displacement arising from deflection of the bed base to thereby identify the load/displacement relationship of the mattress.

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T0302T 294T660

REMARKS

The above amendments are made solely to better conform the claims to U.S.
practice.

Prompt examination and favorable consideration are respectfully requested.

Respectfully submitted,

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Date: September 5, 2001

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"DOCKET" 29247650

Attachment to Preliminary Amendment dated September 5, 2001

Marked-up Claims 1, 3-10

1. (Amended) Apparatus for assessing the condition of a person support surface [(12)] which comprises a frame [(A)] for extending over the support surface, an indenter [(5)] mounted on said frame and a load sensor [(4)] disposed between the indenter and the frame, means for pressing the indenter into the support surface, displacement measuring means for measuring the movement of the indenter into the support surface and data processing means for [analysing] analyzing the force applied to the indenter in relation to the displacement of the indenter into the support surface, [characterised in that] wherein the apparatus is mobile and includes manually actuated means [(6)] for pressing the indenter into the support surface.

3. (Amended) Apparatus according to claim 1 [or 2] wherein the frame includes means [(3)] for removable attachment to a bed base for supporting a mattress.

4. (Amended) Apparatus according to claim 2 wherein the frame is supported from a base member [(42)] adapted to extend beneath a bed base, while said frame is adapted to extend in cantilever over a mattress supported on said bed base.

Attachment to Preliminary Amendment dated September 5, 2001

Marked-up Claims 1, 3-10

5. (Amended) Apparatus according to [any one of the preceding claims] claim
1 wherein said manually operated means comprises a handle [(6)] for depressing the
indenter into the support surface.

6. (Amended) Apparatus according to [any one of the preceding claims] claim
1 wherein the indenter [(5)] comprises a curved surface mounted for rotational movement
on said frame.

7. (Amended) Apparatus according to claim 6 wherein the curved surface
comprises a wheel or sphere [(5)].

8. (Amended) Apparatus according to [any one of the preceding claims] claim
1 wherein the frame comprises a parallelogram linkage [(1,21,22)].

9. (Amended) Apparatus according to [any one of the preceding claims] claim
1 wherein said data processing means [(7)] includes means for assigning an identifying
code to support surface to be tested and for preparing a label bearing said code and data
relating to the [behaviour] behavior of the mattress when tested.

Attachment to Preliminary Amendment dated September 5, 2001

Marked-up Claims 1, 3-10

10. (Amended) A method of testing a mattress [(12)] in situ on a bed base [(11,41)] which comprises applying to the surface of the mattress an indenter [(5)], depressing the indenter into the mattress, measuring the displacement of the indenter as a function of the load applied to the indenter, constructing a load/displacement curve [(51)] and discriminating the displacement arising from deflection of the bed base to thereby identify the load/displacement relationship of the mattress.

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APPARATUS FOR THE ASSESSMENT OF MATTRESSES

This invention relates to apparatus for the assessment of a support surface such as a mattress, so as to determine objectively whether the support surface has worn out.

There are many instances where it is desirable to provide an objective test of the condition of a support surface such as a mattress. For example, it is known that mattresses have a finite life span and that after a period of use, they begin to lose their resilience and this leads to the phenomenon known as "bottoming". This refers to the yielding of the mattress to such an extent that the occupant comes into contact with the hard base of the bed.

In hospitals, such a condition represents a serious hazard which greatly increases the risk of patients developing pressure sores. Since the treatment of pressure sores constitutes substantial expense to the hospital in terms of increased bed occupancy and nursing care, it is desirable to detect deterioration of mattresses at an early stage and dispose of them before the above hazardous condition is reached.

While fatigue of a mattress is related to its age, this is only one factor and mattresses and other support surfaces cannot be discarded simply on an age basis, since this would lead to disposal of many mattresses which are still in a serviceable condition.

The present established method of determining whether hospital mattresses are in a useable condition is the so-called "nurse fist test". In this test, an experienced operative manually depresses the mattress at three defined points along

is length and subjectively forms an opinion as to the condition of the mattress. However, this subjective test has been shown to suffer from poor repeatability and inter operator reliability.

The present invention, therefore, is directed to the provision of apparatus and method for objectively determining the condition of mattresses and other support surfaces, such as seats and wheelchair cushions.

US-A-4,140,008 describes apparatus for measuring the firmness of a resilient object, such as a mattress. The apparatus described in this document comprises a platen, which is supported by a frame from a fixed base, and is drawn into the object by a motor.

According to one aspect of the present invention there is provided apparatus for assessing the condition of a person support surface which comprises a frame for extending over the support surface, an indenter mounted on said frame and a load sensor disposed between the indenter and the frame, means for pressing the indenter into the support surface, displacement measuring means for measuring the movement of the indenter into the support surface and data processing means for analysing the force applied to the indenter in relation to the displacement of the indenter into the support surface, characterised in that the apparatus is mobile and includes manually actuated means for pressing the indenter into the support surface.

2a

In general, the apparatus according to the invention will be portable and has a frame which is supported either from the bed base below the mattress, or from a base member which is adapted to extend beneath the bed base.

In a preferred form of the invention, the frame is supported in cantilever from one side of the support surface and the indenter is moved downwardly to depress the support surface by pressure applied to a handle by an operator. The frame may include guide means to guide movement of the indenter in an essentially vertical manner into contact with the support surface.

It has been found that a parallelogram frame is suitable to guide movement of the indenter along an essentially vertical path.

In the case of a hospital bed, the frame may be temporarily attached to the support frame of the bed, e.g. by a clamping device, and may be moved to different positions along the bed so as to test the mattress condition in the normal standard points along its length. These generally are one quarter, one half and three quarters of the distance from the head of the bed approximately along a centre line. In the case where the bed has no convenient frame for attachment of the testing apparatus, the frame may be in the form of a C-shaped structure having a base portion adapted to extend beneath the base of the bed, while the upper part of the frame extends over the mattress and enables the indenter to be brought into contact with the surface of the mattress.

The indenter preferably has a curved surface and may, for example, comprise a part of or a complete wheel or sphere.

In use, the indenter is depressed into the mattress until resistance is felt by the operator. A load cell mounted between the indenter and the frame measures the load applied, while displacement of the indenter into the bed is simultaneously measured by a suitable device. In the case where the whole or a part of the frame pivots in cantilever from a support, displacement is conveniently measured by means of a rotary potentiometer or equivalent rotation measurement device which measures pivoting movement of the frame and thus, indirectly, the displacement of the indenter.

Further features of the present invention will become apparent from the accompanying drawings, in which:-

Figure 1 is a side elevation of one embodiment of the testing apparatus in accordance with the invention;

Figure 2 is a similar view of the apparatus attached to a bed frame in position to test a mattress;

Figure 3 is a perspective view of the apparatus shown in Figures 1 and 2;

Figure 4 is a modified apparatus designed for use with beds having no convenient bed frame; and

Figure 5 is a typical load displacement curve obtained by using the apparatus of the invention.

Referring to Figures 1, 2 and 3, the mattress testing apparatus comprises a frame A including a vertical post (20) for attachment by a clamp (3) to a longitudinal member (13) of a bed frame (11). The vertical post (20) can be rapidly attached to one of the longitudinal members (13) in a desired position by clamp (3) so that the apparatus extends across the bed as shown in Figure 2. Mounted on the post (20) is a parallelogram structure (8) comprising horizontal and vertical members (22,21) pivotably linked by pivot pins (1).

Incorporated in one of the pivot pins (1) is a rotary potentiometer or other rotary measurement device (2) which measures the angle between the vertical bar (21) and the horizontal bar (22) which, together with the upper part of the post (20) and the other horizontal bar, form the parallelogram structure (8). The upper bar

(22) extends in a direction away from the post (20) and is connected to a handle (6) which can be depressed by the operator to force an indenter (5) into contact with the bed in the direction of the arrow (14) shown in Figure 2.

Mounted between the parallelogram frame (8) and the indenter (5) is a load cell (4). The load cell may be an 'S' or 'C' shaped beam whose distortion under load is transmitted by an electrical signal to a microprocessor.

The indenter wheel (5) is free to rotate about axle (9) which relieves side loads which might be applied to the load cell when the indenter wheel is acting against a horizontal surface. The side loads may otherwise arise from the arc effect of the movement of the linkage. Preferably, a pair of parallel arranged wheels (which may be mounted coaxially) may be employed. This arrangement represents the bony ischial protrusions of a user of the mattress.

A control box (7) is mounted adjacent the handle and contains an analogue to digital converter. Force and displacement information are analysed by a microprocessor contained within the control box (7). Calculations are performed based on the force displacement curve generated by analysing the force displacement data, generated by the rotary potentiometer and the load cell. The results of these calculations are then displayed to the user on an LCD, or other indicating device on the control box.

The control box may also be arranged to report that a proper measurement has been taken and may convert the load displacement data to a single number which rates the condition of the mattresses tested.

The control box may also be arranged to report that a proper measurement has been taken and may convert the load displacement data to a single number which rates the condition of the mattresses tested.

Figure 4 is a side elevation of a modification of the apparatus shown in Figures 1, 2 and 3. The upper part of the apparatus is constructed in the same way as in Figures 1, 2 and 4 and the same reference numerals are used to identify equivalent components.

In Figure 4, the vertical support post (20) is mounted on a platform (42) which may be supported on castors (43). The vertical profile of the platform and castors is low so that it can readily be pushed beneath a bed base (41), which may be of the divan type. In use, the apparatus is pushed beneath the bed base (41) until the post (20) touches the vertical side of the bed base. Handle (6) is depressed to bring the wheel into contact with the surface of the mattress (12) and is pushed into the mattress until maximum resistance is felt and the console (7) indicates that a proper reading has been taken. Data is then processed in the same way as described herein.

It is important to be able to test the mattresses when they are lying on an existing bed frame so that measurements can be taken in situ. In order to grade mattresses independently of the supporting frame, it is necessary to exclude the displacement of the base when the test is carried out. This is done by assuming that the load displacement curve of the mattress base is a straight line. This part of the data measured can be excluded by carrying out a double differential of the load

The microprocessor can also be linked to a device for printing off data about the mattress in the form of a label, which can then be attached to the mattress and re-examined subsequently. The label can be in the form of a printed plastic strip or, in another embodiment, incorporate salient information including the identification of the mattress and the measurement recorded at a previous test. Conveniently, the label may be placed in a pocket in the mattress or cover or attached by pressure sensitive adhesive. If the information is recorded, e.g. on a magnetic strip or on a bar code, it may be machine-readable.

CLAIMS:-

1 Apparatus for assessing the condition of a person support surface (12) which comprises a frame (A) for extending over the support surface, an indenter (5) mounted on said frame and a load sensor (4) disposed between the indenter and the frame, means for pressing the indenter into the support surface, displacement measuring means for measuring the movement of the indenter into the support surface and data processing means for analysing the force applied to the indenter in relation to the displacement of the indenter into the support surface, characterised in that the apparatus is mobile and includes manually actuated means (6) for pressing the indenter into the support surface.

2. Apparatus according to claim 1 wherein the frame is supported in cantilever from one side of the support surface.

3. Apparatus according to claim 1 or 2 wherein the frame includes means (3) for removable attachment to a bed base for supporting a mattress.

4. Apparatus according to claim 2 wherein the frame is supported from a base member (42) adapted to extend beneath a bed base, while said frame is adapted to extend in cantilever over a mattress supported on said bed base.

5. Apparatus according to any one of the preceding claims wherein said manually operated means comprises a handle (6) for depressing the indenter into the support surface.

6. Apparatus according to any one of the preceding claims wherein the indenter (5) comprises a curved surface mounted for rotational movement on said frame.

7. Apparatus according to claim 6 wherein the curved surface comprises a wheel or sphere (5).

8. Apparatus according to any one of the preceding claims wherein the frame comprises a parallelogram linkage (1,21,22).

9. Apparatus according to any one of the preceding claims wherein said processing means (7) includes means for assigning an identifying code to the support surface to be tested and for preparing a label bearing said code and data relating to the behaviour of the mattress when tested.

10. A method of testing a mattress (12) in situ on a bed base (11,41) which comprises applying to the surface of the mattress an indenter (5), depressing the indenter into the mattress, measuring the displacement of the indenter as a function of the load applied to the indenter, constructing a load/displacement curve (51) and discriminating the displacement arising from deflection of the bed base to thereby identify the load/displacement relationship of the mattress.

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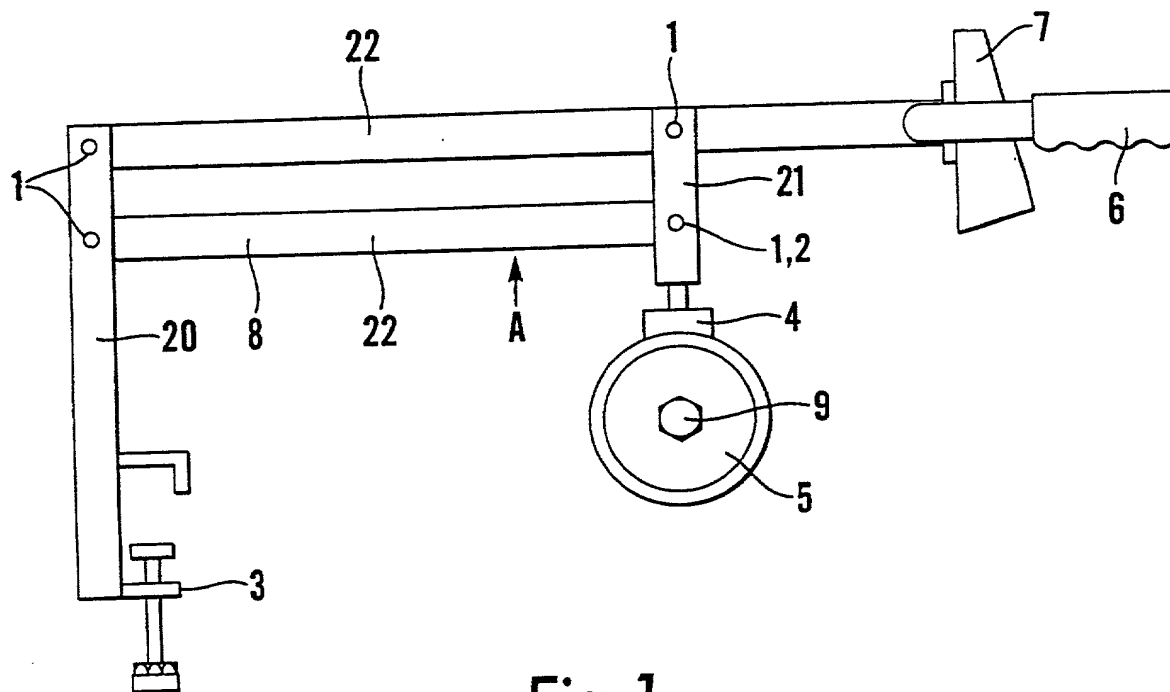


Fig. 1

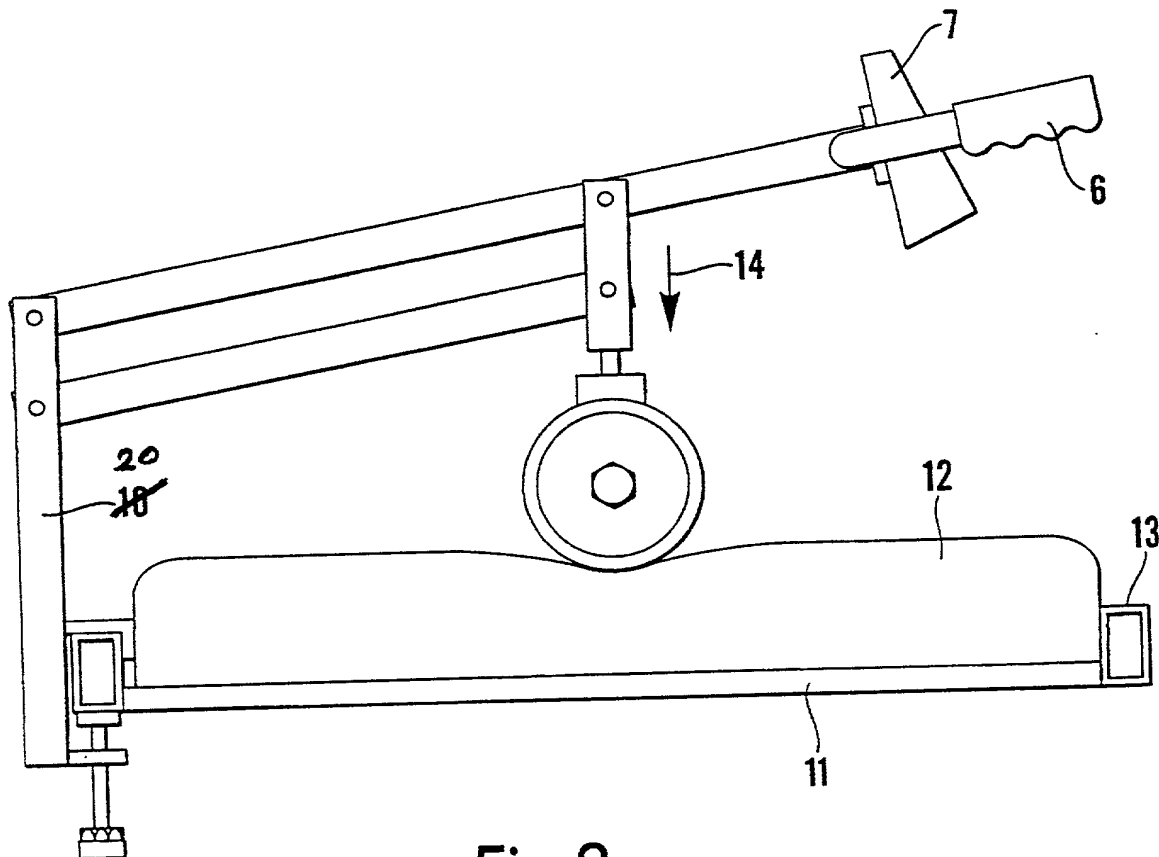


Fig. 2

AMENDED SHEET

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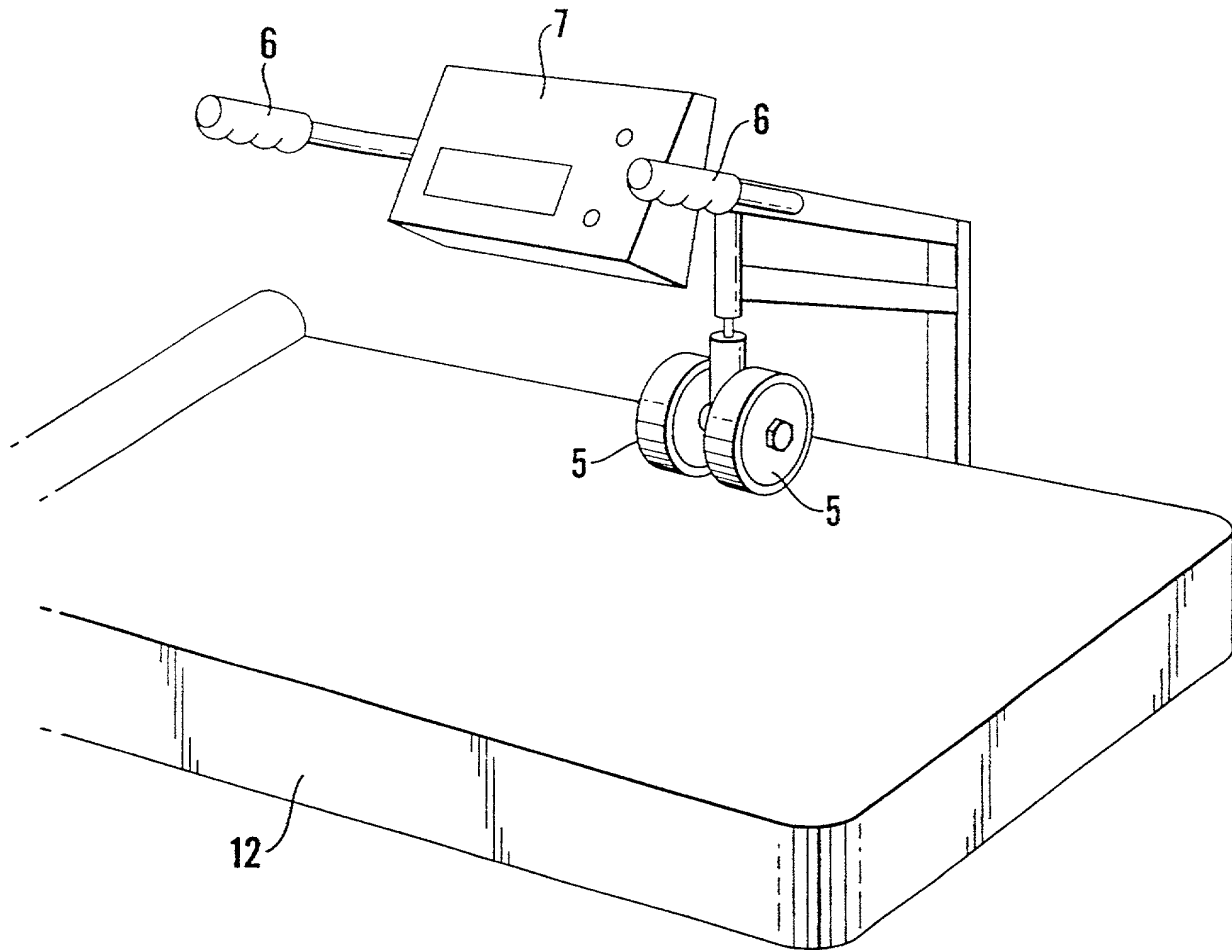


Fig.3

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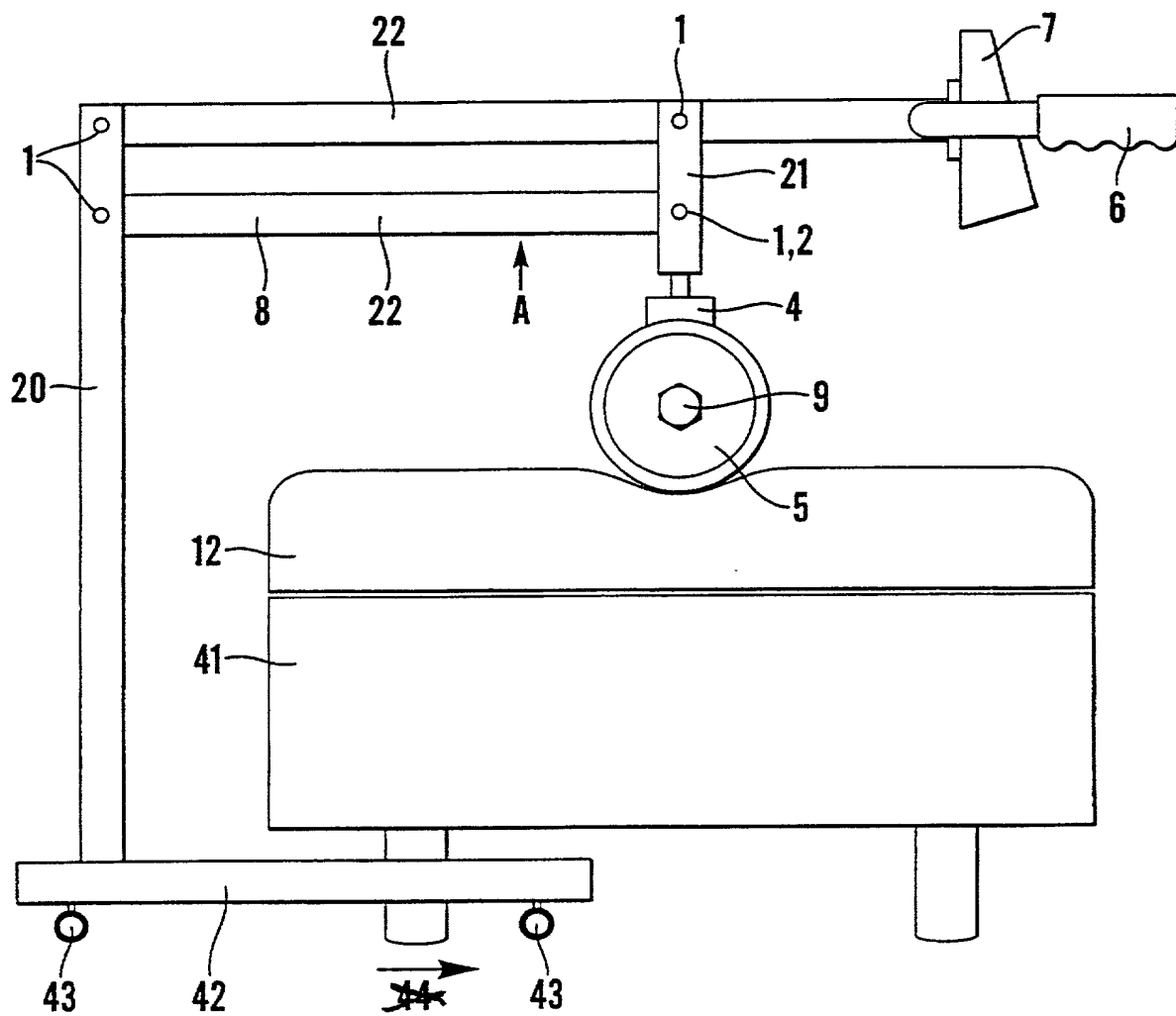


Fig.4

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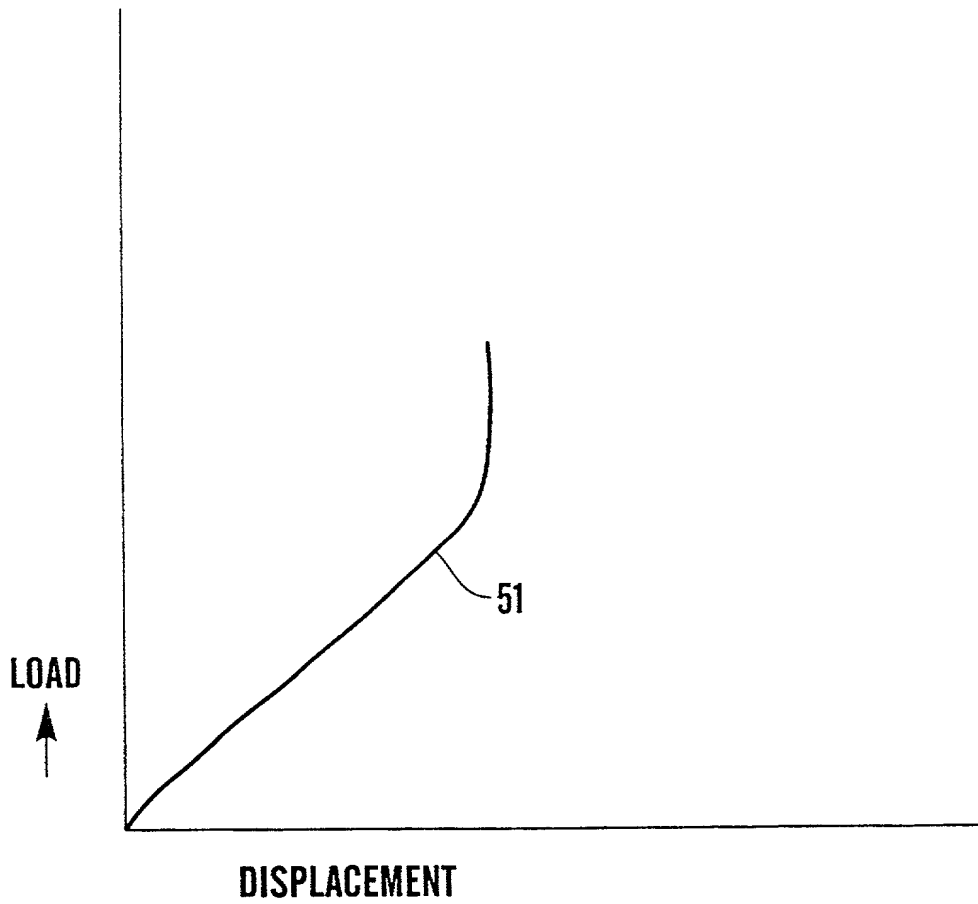


Fig.5

COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY
 (Includes Reference to Provisional and PCT International Applications)

Attorney's Docket No.

004565-070

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

APPARATUS FOR ASSESSMENT OF MATTRESSES

the specification of which (check only one item below):

☐ is attached hereto.☒ was filed as United States application

Number _____

on September 5, 2001

and was amended

on September 5, 2001 (if applicable).☐ was filed as PCT international application

Number _____

on _____

and was amended

on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 (a)-(e) of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. §119:

COUNTRY (if PCT, indicate "PCT")	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 35 U.S.C. §119
United Kingdom	9905005.6	5 March 1999	<u>X</u> Yes _ No
			_ Yes _ No
			_ Yes _ No
			_ Yes _ No
			_ Yes _ No

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below.

(Application Number)

(Filing Date)

(Application Number)

(Filing Date)



09914737 120301

COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY (CONT'D)
 (Includes Reference to Provisional and PCT International Applications)

Attorney's Docket No.

004565-070

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose to the Office all information known to me to be material to the patentability as defined in Title 37, Code of Federal Regulations §1.56, which became available between the filing date of the prior application(s) and the national or PCT international filing date of this application:

PRIOR U.S. APPLICATIONS OR PCT INTERNATIONAL APPLICATIONS DESIGNATING THE U.S. FOR BENEFIT UNDER 35 U.S.C. §120:

U.S. APPLICATIONS		STATUS (check one)		
U.S. APPLICATION NUMBER	U.S. FILING DATE	PATENTED	PENDING	ABANDONED
PCT APPLICATIONS DESIGNATING THE U.S.				
PCT APPLICATION NO.	PCT FILING DATE	U.S. APPLICATION NUMBERS ASSIGNED (if any)		
PCT/GB00/00704	28 February 2000	unassigned	X	

I hereby appoint the following attorneys and agent(s) to prosecute said application and to transact all business in the Patent and Trademark Office connected therewith and to file, prosecute and to transact all business in connection with international applications directed to said invention:

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Platon N. Mandros	22,124	Teresa Stanek Rea	30,427	Ronni S. Jillions	31,979
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Norman H. Stepno	22,716	William C. Rowland	30,888	Allen R. Baum	36,086
Ronald L. Grudzicki	24,970	T. Gene Dillahunty	25,423	Brian P. O'Shaughnessy	32,747
Frederick G. Michaud, Jr.	26,003	Patrick C. Keane	32,858	Keuneth B. Leffler	36,075
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James A. LaBarre	28,632	Michael G. Savage	32,596		
E. Joseph Gess	28,510	Gerald F. Swiss	30,113		
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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY (CONT'D) (Includes Reference to Provisional and PCT International Applications)	Attorney's Docket No. 004565-070
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FULL NAME OF SOLE OR FIRST INVENTOR Duncan Shirreffs BAIN		SIGNATURE <i>[Signature]</i>	DATE 8/11/01
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FULL NAME OF SECOND JOINT INVENTOR, IF ANY Martin FERGUSON-PELL		SIGNATURE <i>[Signature]</i>	DATE 7/11/01
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FULL NAME OF THIRD JOINT INVENTOR, IF ANY Patrick John DAVIES		SIGNATURE <i>[Signature]</i>	DATE 22/11/01
RESIDENCE Queensland, Australia <i>Aux</i>		CITIZENSHIP Australian	
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